

AGRICULTURE

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Insight

Agriculture is and will remain a major industry in the nation as well as in California. There is a steady, continuing supply of professional managerial jobs for well-educated people in agriculture and natural resource management. In response to the quality of our programs and the career opportunities, the number of majors in the College of Agriculture continues to rise.

Individuals enrolled in the College of Agriculture receive theoretical knowledge and practical experience—both very necessary in becoming the future leaders of this important economic sector. Students learn through an integrated approach about the complex set of interrelationships between agriculture, the environment, political and social forces, and other sectors of the economy.

Facilities

Excellent agricultural facilities include 800 acres of irrigated farmland and approximately 240 acres of rangeland. A variety of crops are grown at the University Farm. It has excellent orchards and croplands and hosts a variety of livestock to support the educational mission.

Barns, shops, greenhouses, orchards, and laboratories at the University Farm, along with ample classrooms and well-equipped laboratories on the main campus, provide students with a fine environment in which to study and learn about agriculture, natural resources and agricultural business management.

University Farm offers students the opportunity to obtain practical experience in many different areas of both plant and food animal production systems. In addition, students have excellent opportunities to participate in funded applied agricultural research activities conducted by faculty and staff.

Outlook

Career opportunities appear excellent. Federal reports indicate that in the 21st century there will be more professional job openings in the agricultural and natural resource management sectors than there will be qualified graduates to fill those positions. Some graduates in agriculture enter positions leading to management responsibilities on the farm or ranch, in industry, in business, in governmental land management and regulatory agencies, or in research and education.

Other agriculturists are finding employment in various agriculturally related careers such as purchasing, advertising, public relations, transportation, inspection, and market reporting. And still others have taken positions with agricultural cooperatives, food and dairy product

companies, agrichemical manufacturing and sales companies, farm credit, and agricultural communications.

For today's commercial farmer and natural resource manager, a degree in agriculture provides the technical and business background necessary to keep up with rapid changes that are taking place within the agricultural industry. The professional areas of teaching, agricultural extension, rural development, and basic or applied research also attract many graduates.

Programs

Undergraduate

Bachelor's

- Agricultural Business BS (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-business-bs/>)
- Agricultural Science BS (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-science-bs/>)
- Animal Science BS (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/animal-science-bs/>)
- Plant and Soil Science BS (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/plant-soil-science-bs/>)

Minors

- Agricultural Business Minor (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-business-minor/>)
- Agriculture Minor (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agriculture-minor/>)
- Animal Science Minor (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/animal-science-minor/>)

Certificates

- Plant Protection Certificate (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/plant-protection-certificate/>)

Credentials

- Teaching Credential Program in Agriculture (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/teaching-credential-program-agriculture/>)

Pre-professionals

- Pre-Veterinary Program in Animal Science (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/pre-veterinary-program-animal-science/>)

Graduate

Master's

- Agricultural Education MS (<https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-education-ms/>)

See Course Description Symbols and Terms (<https://catalog.csuchico.edu/academic-standards-policies/course-description-symbols-terms/>) for an explanation of course description terminology and symbols, the course numbering system, and course credit units.

Agricultural Business

ABUS 101 Introduction to Agricultural Business and Economics

3 Units GE

Typically Offered: Fall and spring

The role of agricultural business in the economy. Introductory economic and business principles and their application to the solution of agricultural problems. 3 hours lecture. (000014)

General Education: Social Sciences (D)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

ABUS 211 Agricultural Selling and Consulting

3 Units

Typically Offered: Spring only

Application of selling and consulting techniques for agribusiness firms. 3 hours lecture. (015808)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

ABUS 231 Computer Applications in Agriculture

3 Units

Typically Offered: Fall and spring

Survey of microcomputer applications for agribusiness management, emphasizing personnel productivity software, including database manager, advanced spreadsheet, and electronic communication software. 3 hours lecture. (000025)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

ABUS 261 Farm Accounting

3 Units

Typically Offered: Fall and spring

Introduction to the principles of farm accounting, farm business record keeping, agribusiness management, financial analysis, and enterprise budgeting. 1 hour discussion, 2 hours lecture. (000020)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

ABUS 262 Management Accounting for Agriculture

3 Units

Prerequisite: ABUS 261 or ACCT 201.

Typically Offered: Fall and spring

Cost concepts as a management tool in agriculture are explored. Budgeting techniques for planning and control and for long-term projects are developed. 2 hours activity, 2 hours lecture. (015011)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

ABUS 298 Special Topics

1-3 Units

Typically Offered: Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000022)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Lower Division

ABUS 299 Special Problems

1-3 Units

Prerequisite: Faculty permission.

Typically Offered: Fall and spring

This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020956)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 6 units

Course Attributes: Lower Division

ABUS 300 Agricultural Business Competition

1 Unit

Typically Offered: Fall and spring

This course prepares interested students for regional and national Quiz Bowl competition of the Agricultural and Applied Economics Association. Areas of preparation include agricultural business and economics, general agriculture, statistics, economics, accounting, finance management and marketing. 1 hour lecture. (015866)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 8 units

Course Attributes: Upper Division

ABUS 301 Agricultural Production Economics and Quantitative Analysis

3 Units

Prerequisite: ABUS 101 or ECON 103.

Typically Offered: Fall and spring

Application of microeconomic theory to the agricultural production process, including single and multivariate production and cost functions, price determination in competitive and non-competitive markets and programs. 3 hours lecture. (000024)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Upper Division

ABUS 311 Agricultural Markets and Pricing

3 Units

Prerequisite: ABUS 101.

Typically Offered: Fall and spring

Economic principles applied to the marketing of agricultural products. Function, structure, and operation of agricultural markets. Introduction to the futures market. Trends in marketing of California agricultural crops and livestock. 3 hours lecture. (000026)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Upper Division

ABUS 312 Wholesaling and Retailing Food Products

3 Units

Prerequisite: ABUS 311.

Typically Offered: Fall only

This course covers principles and practices of distributing food from producer to consumer. The functions of wholesalers and intermediate handlers, including food brokers, are discussed. An in-depth analysis of the food retail industry is included. 3 hours lecture. (015010)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Upper Division

ABUS 321 Agribusiness Management 3 Units Prerequisite: ABUS 101 or equivalent. Typically Offered: Fall and spring The application of economic and management principles to the planning, control, and organization of agribusiness firms. Linear programming applications, decision trees, inventory control, and equipment replacement. 3 hours lecture. (000027) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ABUS 398 Special Topics 1-3 Units Typically Offered: Inquire at department This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000034) Grade Basis: Graded Repeatability: You may take this course more than once Course Attributes: Upper Division
ABUS 341 Natural Resource Economics  3 Units Prerequisite: ABUS 101 or faculty permission. Typically Offered: Fall only The economics of renewable natural resource use, management, development, and allocation. Conflicts in use, markets for resources, cases of market failure, and economic conservation will be discussed. 3 hours lecture. (015981) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division; Sustainable Course	ABUS 399 Special Problems 1-3 Units Prerequisite: Upper-division standing, faculty permission. Typically Offered: Fall and spring This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in agriculture under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (000035) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Upper Division
ABUS 350 International Agricultural Business Practices 3 Units Typically Offered: Spring only The goal of this course is to have students develop their analytical, decision-making, and communication skills related to marketing and management of food systems in the world economy. Focusing on the unique aspects of the food and fiber trade-physical attributes, storage practices, phytosanitary criteria, and food safety concerns. 3 hours lecture. (020799) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ABUS 411 Seminar in Agricultural and Food Marketing Planning 3 Units Prerequisite: ABUS 311 or faculty permission. Typically Offered: Fall only To provide an in-depth understanding of operating marketing planning and implementation. Development of a marketing plan including product and market assessment, financial evaluation justification, a plan of action, and an evaluation/control component. 3 hours seminar. (000049) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ABUS 389 Internship in Agribusiness 1-3 Units Prerequisite: Permission of Internship Coordinator. Typically Offered: Spring, summer, fall This course is an internship offered for 1.0-3.0 units. You must register directly with a supervising faculty member. Work experience with selected agribusinesses, including financial institutions, marketing agencies, management firms, farms, ranches, private or public agencies. Experience must be related to business aspects of agriculture. Supervised by faculty and staff of cooperating banks, farms, agencies, and corporations. 0 hours independent study. (000032) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 15 units Course Attributes: Upper Division	ABUS 412 Agricultural and Food Marketing Competition 1 Unit Prerequisite: ABUS 311. Typically Offered: Spring only Prepares students to compete in marketing competitions. Areas of preparation include developing a comprehensive marketing plan that incorporates: product/market assessment, defining business objectives, SWOT analysis, financial evaluation, and professional presentation skills. 1 hour seminar. (020994) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 4 units Course Attributes: Upper Division
ABUS 390 World Food and Hunger Issues  3 Units GC, GE Prerequisite: GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor. Typically Offered: Fall and spring A study of agricultural problems and policies of developing nations. Emphasis on cultural values; physical, economic, and political constraints; hunger and international trade. 3 hours lecture. (015535) General Education: Upper-Division Social Sciences (UDD); Agriculture, Food, and Environment Pathway; Global Studies Pathway Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division; Global Cultures; Sustainable Course	ABUS 415 Agribusiness Data Analysis 3 Units Prerequisite: ABUS 231, MATH 105. Typically Offered: Fall and spring Methods in agribusiness data analysis, including descriptive and inferential statistics, hypothesis formulation and testing, analysis of variance, and regression analysis. Topics include statistical techniques for a range of agricultural applications, including the analysis of price-determining factors for agricultural products. 3 hours lecture. (000040) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division

ABUS 421 Advanced Agribusiness Management 3 Units**Prerequisite:** ABUS 301, ABUS 321, senior standing.**Typically Offered:** Fall and spring

Agribusiness organization and management. Budgeting, input-output relationships, and enterprise analysis in decision making. Application of economic and management principles. Human resource management. 2 hours activity, 2 hours lecture. (000041)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**ABUS 425 Cooperatives Seminar 3 Units****Prerequisite:** ABUS 101, ABUS 321, senior standing.**Typically Offered:** Inquire at department

Cooperative principles and philosophy. Types and importance of cooperative activity in the U.S. Accounting for cooperative activity. 3 hours seminar. (000067)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**ABUS 435 Commodity Futures and Options Markets 3 Units****Prerequisite:** ABUS 231.**Typically Offered:** Spring only

Application of strategies to manage risk in commodity markets through the understanding of forwards, futures, and options contracts. 3 hours lecture. (021696)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**ABUS 451W Agricultural Policy (W) 3 Units W****Prerequisite:** ABUS 301, ECON 102.**Typically Offered:** Fall and spring

Domestic and international issues in U.S. agricultural food policy. A study of the major problems confronting agriculture, the process by which government formulates agricultural policy, and the socio-economic impact of current government programs. 3 hours lecture. (000029)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Writing Course**ABUS 464 Farm and Ranch Appraisal 3 Units****Prerequisite:** ABUS 101.**Typically Offered:** Fall only

Principles and techniques of farm and ranch appraisal. Valuation of farm and rural resources. 3 hours laboratory, 2 hours lecture. (000031)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**ABUS 465 Agricultural Finance 3 Units****Prerequisite:** ABUS 101 and ABUS 261.**Typically Offered:** Fall and spring

Financing of agricultural enterprises. Principles, methods, and institutions involved in financing farming enterprises and related agricultural industries. Coordinated financial statements. Capital budgeting. 2 hours activity, 2 hours discussion. (000030)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**ABUS 487 Risk Management Strategies: Personnel & Equipment 3 Units****Typically Offered:** Spring only

Study of risk management strategies in agriculture, including workplace safety, rules, and regulations. Equipment selection, maintenance, trends, and economics. Determining equipment requirements and costs. Systems for recording parts, services, and maintenance. 3 hours lecture. (000179)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**ABUS 489 Internship in Agri Business 1-3 Units****Typically Offered:** Fall and spring

3 hours lecture. (000043)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**ABUS 498 Special Topics 1-3 Units****Typically Offered:** Inquire at department

This course is for special topics offered for 1.0-3.0 units respectively. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000069)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Upper Division**ABUS 499 Special Problems 1-3 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (000071)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**ABUS 499H Honors Research in Agricultural Business 6 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

An intensive 6-unit, one-year course in agricultural business research. See College office for details. Open to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (000072)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division

Agricultural Education

AGED 201 Introduction to Agricultural Education 3 Units**Typically Offered:** Fall only

Objectives, nature, and scope of teaching vocational agriculture. Types of programs and career opportunities in vocational education. 3 hours lecture. (000203)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division

AGED 210 Directed Field Experience Agricultural Education 2 Units Typically Offered: Fall only An individualized class in gaining teaching experience through observation and critique of high school students and teachers in the classroom, at FFA events, and in supervised occupational experiences. 2 hours lecture. (000204) Grade Basis: Graded Repeatability: You may take this course for a maximum of 2 units Course Attributes: Lower Division	AGED 521 Curriculum and Methods of Teaching Vocational Agriculture 3 Units Prerequisite: Acceptance into the fifth-year program in agricultural education. Typically Offered: Fall and spring Principles of curriculum development in agriculture; methods of teaching and organization of teaching material. 3 hours seminar. (000222) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
AGED 321 Program Development in Agriculture Education 2 Units Typically Offered: Spring only Up-to-date approaches in integrated program development based on occupational opportunities and community needs. Philosophy, organization, and administration of agricultural education programs. Development of curriculum, supervised occupational experience, Future Farmers of America (FFA), and summer programs. 2 hours activity, 1 hour seminar. (000220) Grade Basis: Graded Repeatability: You may take this course for a maximum of 2 units Course Attributes: Upper Division	AGED 600 Research Methodology in Agricultural Education 3 Units Prerequisite: Graduate status. Typically Offered: Spring, summer, fall Research methods are presented in support of decision-making in a scientifically literate world. Literature, logic, and research methodologies for quantitative paradigms are presented. Studies in the social sciences are emphasized. Students prepare a proposal for their thesis, dissertation, or creative component. The goal of this course is to gain an understanding of the theory and practice of social science research through critical evaluation of the research literature and by developing a research proposal. 9 hours independent study. (021209) Grade Basis: Graduate Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Graduate Division
AGED 398 Special Topics 1-3 Units Typically Offered: Inquire at department Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 0 hours supervision. (022052) Grade Basis: Credit/No Credit Repeatability: You may take this course more than once Course Attributes: Upper Division	AGED 601 Program Planning in Agricultural Education 3 Units Prerequisite: Graduate status. Typically Offered: Spring, summer, fall Development of a total agricultural education program in communities using all available resources. The purpose of this course is to expose students to a variety of situations and experiences that improve their ability to develop and implement effective education programs in formal and non-formal community education settings. To achieve this desired end, students (a) acquire an understanding of program development from theory to practice and (b) strengthen or develop their skills in planning, designing, implementing, evaluating, and accounting for educational programs for targeted audiences. 3 hours lecture. (021210) Grade Basis: Graduate Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Graduate Division
AGED 420 Techniques in Vocational Agricultural Instruction 2 Units Prerequisite: AGED 201 or faculty permission. Typically Offered: Spring only Preparation for student teaching in agriculture. Orientation to classroom situations. Development of plans for teaching, including daily lessons and unit plans, utilization of source information, and resources. Class demonstration in teaching procedures, analysis, and evaluation. 2 hours activity, 1 hour seminar. (000208) Grade Basis: Graded Repeatability: You may take this course for a maximum of 2 units Course Attributes: Upper Division	AGED 602 Instructional Methods in Agricultural Education 3 Units Prerequisite: Graduate status. Typically Offered: Spring, summer, fall This is an online course designed for graduate students who have a desire to improve their teaching ability by incorporating a variety of teaching methods into the learning setting. Specifically, this course focuses on various learning theories and teaching methods for both formal and non-formal learning situations. This online course is composed of teacher-centered approaches the first half of the semester with a focus on theory. Student-centered approaches consume the second half of the semester with a focus on the application of teaching methods and an emphasis on reflection. Students are expected to access the D2L site for course content and discussions. 9 hours independent study. (021213) Grade Basis: Graduate Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Graduate Division
AGED 421 Curriculum and Methods in Teaching Agricultural Mechanics 3 Units Prerequisite: AGET 120, AGET 150 or equivalent. Typically Offered: Fall only Curriculum development and methods of teaching and motivating students in agricultural mechanics. 3 hours laboratory, 2 hours seminar. (000230) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	
AGED 520 Supervised Teaching: Agriculture 10 Units Prerequisite: Acceptance into the fifth-year program in agricultural education. Typically Offered: Fall and spring Supervised teaching in public secondary school daily for one semester. Candidate will arrange their schedule so that they are free from all campus obligations. 0 hours independent study. (000221) Grade Basis: Graded Repeatability: You may take this course for a maximum of 10 units Course Attributes: Upper Division	

AGED 603 Agricultural Leadership, Supervision, and Administration**3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

Survey of concepts, theories, and practices of leadership, personal development, and group dynamics. Exploration of leadership traits and models with a focus upon how they apply to Agricultural Education. 9 hours independent study. (021214)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 604 Program Evaluation in Agricultural Education****3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

Techniques in evaluating vocational, technical, and extension education programs. Principles and procedures of evaluation with emphasis on focusing, designing, reporting, and managing evaluation. 9 hours independent study. (021215)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 605 Adult Learners in Agricultural Education****3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

Determining adult needs, priorities, participation in educational activities and adoption of new ideas and practices. Designing, organizing, conducting, and evaluating adult education programs in agricultural and extension education. The goal of this course is to understand the theory and practice of adult education. Students design an educational program for adult learners in an agricultural and extension education context. 9 hours independent study. (021211)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 607 Agricultural Education Foundations, History, and Philosophy****3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This class is intended to serve as the foundation of your graduate-level studies in agricultural and extension education. It is intended to acquaint the student with broader cultural and historical conditions based on a philosophical perspective. This course should give you the ability to formulate some of the assumptions on which you will build your particular knowledge base in agricultural education. Through this knowledge acquisition, the student should investigate their curriculum of study, reminded of this general framework within which the specialized knowledge of agricultural education is explained and formulate your philosophical beliefs. The primary purpose of this course is to provide the student with an examined grounding in the principle divisions of thought (philosophies), seminal events and people in the history of agriculture (history), and decisions made (policy), resulting in the current state of affairs in agricultural education. It has been said that policy is the expression or operationalization of philosophy and policy both creates and is influenced by history. The convergence of these factors determines the future direction of agriculture and agricultural education. 9 hours independent study. (021212)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 608 Teaching Diverse Learners in Agricultural Education****3 Units****Prerequisite:** Graduate Status.**Typically Offered:** Spring, summer, fall

This course is designed to develop an understanding and application of skills needed to successfully integrate special needs students into the secondary agriculture classroom. Specific modifications for a variety of special needs students are addressed, especially as needed to meet the unique nature of secondary agricultural education classroom. FFA and SAE components. 3 hours lecture. (021278)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 609 Critical and Creative Thinking in Agricultural Education****3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This course is designed to teach students critical and creative thinking skills that are applied in context specific problem solving and decision making. Students learn to apply critical and creative thinking skills to their everyday lives. Students apply critical and creative thinking skills to local, state, national as well as global issues and problems. 9 hours independent study. (021392)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 610 Assessment in Agricultural Education****3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This graduate level course is designed to develop an understanding and application of assessment relevant to agricultural education. Students develop, administer, and analyze formal, informal, and performance assessment techniques to monitor and evaluate student learning and guide modification. 9 hours independent study. (021216)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 611 Curriculum Development in Agricultural Education****3 Units****Typically Offered:** Fall and spring

The essential question the learner should ask in preparing for this course is: How do I make professional instructional decisions that maximize learning for my students? With this question in mind, we explore together curriculum theories, challenges, and opportunities that focus on teacher decision-making with the goal of providing the most rigorous, relevant and comprehensive curriculum possible given the local circumstances surrounding individual Agricultural Education programs. 3 hours lecture. (021852)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division

AGED 612 Communicating Ethical Issues in Agriculture 3 Units**Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This course is designed to teach students to better be able to articulate agricultural issues in an ethical theory context. Additionally, students learn to explore how topics from proponents and opponents of agricultural and natural resources practices are communicated and improve their understanding of communicating agricultural ethical issues. 9 hours independent study. (021391)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 613 History and Philosophy of Agricultural and Extension Education 3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

The primary purpose of this course is to provide the student with an examined grounding in the seminal events and people in the history of agriculture (history), principle divisions of thought, and decisions made, resulting in the current state of affairs in agricultural and extension education. It has been said that policy is the expression or operationalization of philosophy and policy creates history yet is influenced by history. The convergence of these factors determines the future direction of agriculture and extension education. 9 hours independent study. (021381)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 614 Grant Seeking in Agricultural Education 3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

External funding proposal development for foundation and government agencies. Conceptualizing projects, identifying funding sources, and developing proposals that follow RFP guidelines including a literature review, need for the project, approach, timeline, and budget. 9 hours independent study. (021390)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 615 Information Technologies in Agricultural Education 3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This course seeks to identify and explain the principles, theory, and techniques of using information technologies to provide instruction to learners, both in person and at a distance, in formal and non-formal educational settings. 9 hours independent study. (021388)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 617 Knowledge Management in Agricultural Education and Communication 3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

Knowledge Management is a discipline that takes a comprehensive, systematic approach to the information assets of an organization by identifying, capturing, collecting, organizing, indexing, storing, integrating, retrieving, and sharing them. This strategy turns an organization's intellectual assets into greater productivity and increased competitiveness. It encourages collaboration for the sharing of expertise and knowledge of the best practices. This course examines knowledge management as it is emerging and being applied in agriculture and natural resources. 9 hours independent study. (021389)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 619 Volunteering Management in Agricultural Education 3 Units****Typically Offered:** Fall and spring

This course is designed for educators working in either a formal or informal setting who have responsibility for recruiting, managing, and leader volunteers. The goal of this course is to provide a comprehensive introduction to the dynamic area of volunteerism. Students design a Volunteer Management Portfolio suitable for use in non-profit organizations or educational programs found in formal or informal settings. Specific course goals include: 1. Provide an overview of trends and issues in volunteer management. 2. Provide leadership strategies for optimizing volunteer effectiveness. 3. Provide strategies for evaluating volunteer service. 3 hours lecture. (021853)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 620 Online Media in Agricultural Education and Communication 3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

The convergence of multiple forms of media - newspaper, video, radio, and photojournalism - on the Internet is impacting how agricultural communicators provide information on various topics. The increasing presence of social media also impacts how agricultural messages are communicated. Agricultural communicators should understand how audiences in agriculture and natural resources utilize online media and for what purposes. 9 hours independent study. (021380)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 621 Advanced Methods of Teaching Agricultural Education 3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This course is designed for professional educators who want to improve their teaching practice. The goal of every good teacher is to create effective learning experiences for students, but how do you create those learning experiences in a challenging school environment? 9 hours independent study. (021387)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division

AGED 622 Priority Management in Agricultural and Extension Education**3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

Examination of theoretical, psychological, and empirical bases for strategies and techniques that contribute to enhancing managerial and personal effectiveness of agricultural educators and individuals in related agricultural organizations. 3 hours independent study. (021379)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 623 Ethics and Ethical Applications in Agricultural Leadership****3 Units****Typically Offered:** Fall and spring

Ethical reasoning skills necessary for making decisions in agricultural leadership. Emphasis is given to developing an ethical mindset towards human diversity in organizations, social and leadership positions responsibility. Topics include: purpose of the ethics in leadership, the nature of ethics, ethical dilemmas, ethical decision making, diversity in organizations (based on race, ethnicity and accent, age, skin color, religion, physical abilities, sexual orientation and gender) and social responsibility in the agricultural industry. The main focus is to develop ethically and socially responsible leaders and organizational members in the agricultural industry. 3 hours lecture. (021855)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 624 Technological Applications in Agricultural Leadership****3 Units****Typically Offered:** Fall and spring

Overview of essential computing, data analysis, and technology applications used in agricultural leadership positions and the agricultural industry. In depth instruction using specific technologies to advance students skills in industry in the 21st century. Emphasized the use of various technology tools to support practices, communication, and the proves of change in agricultural leadership. 3 hours lecture. (021854)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 625 Technological Change in Agricultural Education****3 Units****Prerequisite:** Graduate Status.**Typically Offered:** Spring, summer, fall

Processes by which professional change agents in agricultural and extension education influence the introduction, adoption, and diffusion of planned technological change. 9 hours independent study. (021383)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 630 Leadership in Agricultural Organizations****3 Units****Typically Offered:** Fall and spring

This course focuses on leadership potential development of students to serve in various agribusiness's, organizations, and associations. Course content includes an investigation and critical analysis of major leadership theories and models. The course serves to facilitate the expansion of the sphere of leadership influence of agriculturalists in their communities and homes. 3 hours lecture. (021872)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 650 Advanced Agricultural Issues****3 Units****Typically Offered:** Fall and spring

This advanced course is designed to develop critical thinking and writing skills and develop an understanding of current issues facing the agricultural industry. Students gain an appreciation for the diversity of agricultural and agricultural policies. 3 hours lecture. (021850)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 689 Graduate Internship in Agriculture****1-6 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

The objective of the graduate internship program is to enhance the technical, professional and/or leadership capabilities of employees involved in agriculture production, service, education, business, communication and/or research organizations. Graduate students received practical experience in a wide variety of agricultural science related fields, including, production, business, teaching, service, communication, and research. The internship program may also serve to acquaint student interns with agricultural practices, while establishing valuable professional contacts in their chosen field. Additionally, the internship offers opportunity for professional growth. The internship may be spent in the private or public sector. 0 hours independent study. (021436)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Graduate Division**AGED 696 Comprehensive Examination in Agricultural Education****3 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This graduate level course is designed to serve as one option for the required culminating experience in Agricultural Education. A formal examination comprised of content across the student's course of study shall be prepared by the graduate advisory committee. The exam includes a six hour written comprehensive examination and a one hour oral review of the written exams. 9 hours independent study. (021385)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Graduate Division**AGED 697 Independent Study****1-6 Units****Prerequisite:** Graduate status.**Typically Offered:** Fall and spring

This course is a graduate-level independent study, offered for 1-6 units. 12 hours supervision. (021292)

Grade Basis: Report in Progress: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Graduate Division

AGED 699P Master's Project in Agricultural Education 3-6 Units**Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This course is designed to demonstrate an understanding and application of research through the creation of independent and original work, culminating in a scholarly project. The master's project must document original student work and must be of sufficient quality to share with other professionals. The final project should address a particular need in agricultural education, included documented research, and be presented in a scholarly format. 9 hours independent study. (021217)

Grade Basis: Report in Progress: CR/NC**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Graduate Division**AGED 699T Master's Thesis in Agricultural Education 3-6 Units****Prerequisite:** Graduate status.**Typically Offered:** Spring, summer, fall

This course is designed to demonstrate an understanding and application of research through the creation of independent and original work, culminating in a scholarly research paper. The master's thesis must document original student research in a scholarly presentation capable of submission to research conferences or a professional journal. The thesis should address a particular need in agricultural education and inform practice. 18 hours independent study. (021218)

Grade Basis: Report in Progress: CR/NC**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Graduate Division

Agricultural Engineering Technology

AGET 120 Introduction to Agricultural Mechanics 3 Units**Typically Offered:** Spring only

Selection, care, and use of common tools; study of safety, common materials and skills used in electrical, plumbing, woodworking, metal work, and land measurement in the field of agriculture. 3 hours laboratory, 2 hours lecture. (000166)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**AGET 150 Agricultural Machine Systems 3 Units****Typically Offered:** Fall only

Principles of operation, adjustments, calibration, and safety of wheel and track-type tractors including implements and equipment commonly used in California agriculture. 3 hours laboratory, 2 hours lecture. (000164)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**AGET 198 Special Topics 1-3 Units****Prerequisite:** Department permission.**Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000169)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Lower Division**AGET 220 Agricultural Mechanics Project Development 2 Units****Prerequisite:** AGET 120**Typically Offered:** Spring only

Medium sized project development techniques for agricultural mechanics instruction. Emphasis is on curriculum development, materials, planning, and construction techniques typically used in secondary instruction for construction courses and SAE. 1 hour discussion, 3 hours laboratory. (021527)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 2 units**Course Attributes:** Lower Division**AGET 298 Special Topics 1-3 Units****Typically Offered:** Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (020966)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Lower Division**AGET 299 Special Problems 1-3 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an Independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020957)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Lower Division**AGET 340 GPS & GIS in Agriculture and Natural Resource Management 3 Units****Typically Offered:** Fall only

Application of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) in agriculture and natural resource management. Identification and delineation of locations and areas; collection, analysis, storage, and retrieval of site and time specific data for agriculture and natural resource management and monitoring. 3 hours laboratory, 2 hours lecture. (000168)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Sustainable Course**AGET 360 Irrigation 3 Units****Prerequisite:** PSSC 101 or PSSC 250 or faculty permission.**Typically Offered:** Spring only

Design, management, and evaluation of landscape and agricultural irrigation systems for efficient water use. 3 hours laboratory, 2 hours lecture. (000170)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Sustainable Course

AGET 389 Internship in Agricultural Engineering Technology 1-3 Units

Prerequisite: Prior approval of academic goals by the Internship Coordinator.

Typically Offered: Spring, summer, fall

This course is an internship offered for 1.0-3.0 units. You must register directly with a supervising faculty member. Work experience with selected farm machinery shop or corporations is to be completed and supervised by faculty and staff of cooperating ranch or industry. 0 hours independent study. (000174)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 15 units

Course Attributes: Upper Division

AGET 398 Special Topics 1-3 Units

Typically Offered: Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000176)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Upper Division

AGET 399 Special Problems 1-3 Units

Prerequisite: Upper-division standing, faculty permission.

Typically Offered: Fall and spring

This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in agriculture under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (000177)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 6 units

Course Attributes: Upper Division

AGET 489 Internship in Agri Engineering 1-3 Units

Typically Offered: Fall and spring

3 hours lecture. (000180)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 15 units

Course Attributes: Upper Division

AGET 498 Special Topics 1-3 Units

Prerequisite: Department permission.

Typically Offered: Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000184)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Upper Division

AGET 499 Special Problems 1-3 Units

Prerequisite: Faculty permission.

Typically Offered: Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (000186)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 6 units

Course Attributes: Upper Division

Agriculture

AGRI 180 The University Experience**1 Unit**

Typically Offered: Fall and spring

A college success course for agricultural majors new to California State University, Chico. The course will explore the academic and social opportunities and resources available to promote successful completion of the student's educational goals. 1 hour discussion. (000198)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 1 unit

Course Attributes: Lower Division

AGRI 181 Coordinating Group Agricultural Activities 1-2 Units

Typically Offered: Fall and spring

This course is offered for 1.0 to 2.0 units. An individualized class designed to develop and refine the student's ability to organize and coordinate Agriculture field days and other related group activities. Maximum of four semesters and/or 4 units toward BS degree. 0 hours independent study. (000190)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 6 units

Course Attributes: Lower Division

AGRI 198 Special Topics 1-3 Units

Typically Offered: Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 1 hour seminar. (000202)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Lower Division

AGRI 280 Agriculture Ambassadors 1 Unit

Prerequisite: Faculty Permission.

Typically Offered: Fall and spring

This course is designed to train, develop, and support students that serve in the Agriculture Ambassador role in the College of Agriculture (COA). In this course students learn about the COA and discover their own leadership and communications styles. Students work in teams to organize events and manage COA outreach. Students learn how to effectively represent the COA to numerous constituents, mostly prospective students. Outside of the class meeting time, they give tours, presentations, and conduct meetings. Students participate in leadership development, team building, information gathering, and service skill development activities. 2 hours activity. (021407)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 4 units

Course Attributes: Lower Division

AGRI 298 Special Topics 1-3 Units

Typically Offered: Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 9 hours seminar. (020965)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Lower Division

AGRI 299 Special Problems 1-3 Units Prerequisite: Faculty permission. Typically Offered: Fall and spring This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020958) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Lower Division	AGRI 380B Leadership in the Workplace 3 Units Prerequisite: AGRI 380A or faculty permission. Typically Offered: Spring only An exploration of real world leadership. Development of leadership and interpersonal skills valued in the Agricultural sector. Topics include job search skills, professional resumes, cover letters, and interviewing as well as the skills needed in the workplace. 3 hours seminar. (000217) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
AGRI 301 California Agriculture Seminar 3 Units Prerequisite: Junior or senior standing or faculty permission Typically Offered: Spring only Survey of the production, processing, and distribution of major agricultural commodities. The history, economics, scope, geographical location, general cultural practices, and marketing opportunities of major commodities are discussed. In addition, major issues confronting California agriculture systems are explored. A multiday field trip is required in the course. 3 hours seminar. (021777) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	AGRI 389 Internship in Agriculture 1-12 Units Prerequisite: Prior approval of academic goals by the Internship Coordinator. Typically Offered: Spring, summer, fall This course is an internship offered for 1.0-12.0 units. You must register directly with a supervising faculty member. Work experience with selected agricultural enterprises is supervised by faculty and staff of a cooperating enterprise. 0 hours independent study. (000215) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 15 units Course Attributes: Upper Division
AGRI 305 Agricultural Genetics 3 Units Prerequisite: ANSC 101 or PSSC 101; CHEM 107 or CHEM 111. Typically Offered: Fall and spring Mendelian inheritance, gene structure and action, sex-related inheritance, linkage and mapping, aneuploidy, polyploidy, population and quantitative inheritance, inbreeding and heterosis. 3 hours lecture. (000211) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	AGRI 398 Special Topics 1-3 Units Typically Offered: Inquire at department This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000218) Grade Basis: Graded Repeatability: You may take this course more than once Course Attributes: Upper Division
AGRI 331 Agricultural Ecology  3 Units Prerequisite: Completion of lower-division core or faculty permission. Typically Offered: Fall and spring An interdisciplinary treatment of physical and biological environments used for agriculture. Historical and ecological nature of agriculture its impact on the landscape and society. Comparison of sustainable and non-sustainable agricultural practices. 3 hours laboratory, 2 hours lecture. (000206) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division; Sustainable Course	AGRI 399 Special Problems 1-3 Units Prerequisite: Upper-division standing, faculty permission. Typically Offered: Fall and spring This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in agriculture under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (000219) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Upper Division
AGRI 380A Agricultural Leadership 3 Units Typically Offered: Fall only An investigation of leadership from an individual perspective. Study of introduction to the principles and practices of positive interpersonal relationships for leadership development in the Agricultural Industry. 3 hours seminar. (000216) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	AGRI 432 Holistic Management  3 Units Prerequisite: AGRI 331 or faculty permission. Typically Offered: Spring only A study of sustainable management practices in the context of agricultural land stewardship. The development of practical skills and understanding paramount to leadership and management of personal and professional activities. The focus is on identifying available resources, clarifying goals, developing action plans, and promoting communication, savvy monitoring, and decision making that expedite progress toward a thriving enterprise and contribute to a sustainable community. Case studies, community activities, and discussion explore the impact of management decisions on progress toward desired goals. 3 hours lecture. (000225) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division; Sustainable Course

AGRI 482W Agricultural Issues (W)**3 Units W, GW****Prerequisite:** GE Written Communication (A2) requirement, senior standing or faculty permission.**Typically Offered:** Fall and spring

An examination of major issues confronting agriculture emphasizing critical thinking, research, and balancing complex, and often opposing views of the role of agriculture in society. The course uses group work and presentations to enhance written and oral communication skills. This is the capstone course for AGRI, ANSC, and ABUS majors. 3 hours lecture. (000229)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Writing Course; Graduation Writing Assessment**AGRI 489 Internship in Agriculture****1-3 Units****Typically Offered:** Fall and spring

3 hours lecture. (000227)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**AGRI 490W Agricultural Experimental Research (W)****4 Units W****Typically Offered:** Fall and spring

Students design and execute applied agriculture research projects that seek to improve the management of agricultural enterprises. Students learn the most common experimental designs for agricultural research, utilize computer programs to analyze and interpret experimental data and further develop scientific writing skills. 1 hour discussion, 3 hours lecture. (000223)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 4 units**Course Attributes:** Upper Division; Writing Course**AGRI 498 Special Topics****1-3 Units****Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000231)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Upper Division**AGRI 499 Special Problems****1-3 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (000232)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**AGRI 499H Honors Research in Agriculture****6 Units****Typically Offered:** Fall and spring

An intensive 6-unit, one-year course in agricultural research. See College office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (000233)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**AGRI 695 Graduate Seminar in Regenerative Agriculture** **1 Unit****Prerequisite:** Graduate standing or faculty permission.**Typically Offered:** Fall and spring

This course is designed to support graduate study in Sustainable/Regenerative/Climate Smart/Innovative agriculture and provide opportunities to share ideas and apply knowledge of experimental design, data management techniques, and statistical applications for specific field applications. Each student presents their own independent research, or thesis project or may present journal articles as a component of their exploration into this field of study. Students present their work through oral and poster presentations. 1 hour seminar. (022473)

Grade Basis: Graduate Graded**Repeatability:** You may take this course for a maximum of 2 units**Course Attributes:** Graduate Division; Sustainable Course**AGRI 697 Independent Study****1-4 Units****Typically Offered:** Fall and spring

9 hours supervision. (000240)

Grade Basis: Report in Progress: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Graduate Division**AGRI 698 Special Topics****1-3 Units****Typically Offered:** Inquire at department

This course is for special topics. 3 hours seminar. (022411)

Grade Basis: Graduate Graded**Repeatability:** You may take this course more than once**Course Attributes:** Graduate Division

Animal Science

ANSC 101 Introduction to Animal Science**3 Units****Typically Offered:** Fall and spring

An overview, using a scientific perspective, of farm animals. Highlights anatomy and physiology of farm animals, reproduction, nutrition, animal health, animal products, animal behavior, and pertinent social issues, such as animal rights. Includes human opportunity to influence trait inheritance, population densities, and productivity. 3 hours laboratory, 2 hours lecture. (000419)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**ANSC 110 Directed Work Experience in Animal Sciences****2 Units****Typically Offered:** Fall and spring

Directed work experience in the management of beef, dairy, meats, sheep, and swine enterprises at the University Farm, with three weeks at each enterprise. Weekly conferences on student projects and individual and group problems. 3 hours laboratory, 1 hour lecture. (000424)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 4 units**Course Attributes:** Lower Division**ANSC 120 Livestock Skills****3 Units****Typically Offered:** Spring only even years

An introduction to selection, nutrition, health, and management of beef, sheep, swine, and dairy for livestock youth programs, including ethical practices associated with livestock exhibition. This class is designed primarily for students pursuing a career in agricultural education. 3 hours laboratory, 2 hours lecture. (000446)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division

ANSC 160 Veterinary Practices 2 Units Typically Offered: Fall and spring Designed to allow the student to become familiar with various vaccines, equipment, and restraining techniques used in routine treatment of farm animals. Selection of proper materials, veterinary nomenclature, actual handling and treatment of farm animals involved. 3 hours laboratory, 1 hour lecture. (000436) Grade Basis: Graded Repeatability: You may take this course for a maximum of 2 units Course Attributes: Lower Division	ANSC 250 Live Animal and Carcass Evaluation 3 Units Typically Offered: Spring only Evaluation of market livestock as related to growth and development, production efficiency, carcass merit, selection of breeding animals based on performance, production records and visual appraisal. Specific reference to factors determining carcass value. 2 hours activity, 2 hours seminar. (000445) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division
ANSC 198 Special Topics 1-3 Units Typically Offered: Fall and spring This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term. See the Class Schedule for the specific topic being offered. 3 hours lecture. (000454) Grade Basis: Graded Repeatability: You may take this course more than once Course Attributes: Lower Division	ANSC 271 Principles of Beef Cattle Production 3 Units Typically Offered: Fall only An overview of the United States beef industry including an introduction to the segments of the beef production chain and the scope of the industry. The majority of the course focuses on basic principles including genetics and breeding, nutrition, reproduction, herd health, carcass evaluation and marketing. 3 hours lecture. (020992) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division
ANSC 199 Special Problems 1-3 Units Prerequisite: Faculty permission. Typically Offered: Fall and spring This course is an independent study of a topic or problem. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 0 hours supervision. (022140) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Lower Division	ANSC 274 Principles of Dairy Production 3 Units Typically Offered: Fall only An overview of the United States dairy industry, emphasizing the life cycle of the dairy cow. Topics include calf raising, heifer development, dry cow management, and lactation management. Within each stage of production, discussion may include health, nutrition, reproduction, and genetics. Additionally, facilities management and cow comfort are introduced. 3 hours lecture. (021029) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division
ANSC 220 Introduction to Livestock Evaluation 3 Units Prerequisite: ANSC 101. Typically Offered: Spring only This course provides students a fundamental understanding of how to evaluate market and breeding beef, sheep, goats, and swine utilizing both visual appraisal as well as objective performance records. Students are given a framework to make decisions with an objective approach to select animals based on certain criteria and standards. Students who demonstrate proficiency in understanding selection at its most basic level, as well as demonstrate effectiveness in oral reasons have an opportunity to participate on the Intercollegiate Livestock Judging Team at CSU, Chico. 2 hours activity, 2 hours seminar. (022077) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division	ANSC 276 Principles of Meat Science 3 Units Typically Offered: Spring only Principles of Meat Science in an introductory course in meat science organized to increase student knowledge of muscle foods-their properties, value, and appropriate handling procedures. Current meat processing technologies are presented and pertinent aspects of the meat industry are also discussed. 3 hours lecture. (021772) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division
ANSC 230 Animal Feeds and Nutrition 3 Units Typically Offered: Fall and spring An introduction to the nutrition of domestic and wild animals with emphasis on appropriate nutrition for various activities. A survey of the integration of feed production and animal production systems. Computer formulation and analysis of diets to achieve desired performance levels of animals. 2 hours activity, 2 hours lecture. (000434) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division	ANSC 294 Principles of Rangeland Livestock Management 3 Units Typically Offered: Spring only Students examine the ecological principles that cause rangelands, including grasslands, shrublands, woodlands, and deserts, to change or stay the same. How humans use livestock to manage these ecosystems is explored. 3 hours lecture. (022025) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Lower Division
	ANSC 298 Special Topics 1-3 Units Typically Offered: Inquire at department This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (020968) Grade Basis: Graded Repeatability: You may take this course more than once Course Attributes: Lower Division

ANSC 299 Special Problems 1-3 Units Prerequisite: Faculty permission. Typically Offered: Fall and spring This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020959) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Lower Division	ANSC 340 Reproductive Physiology of Domestic Animals 3 Units Prerequisite: ANSC 101. Typically Offered: Fall and spring The physiological mechanisms of reproduction in domestic animal species. Principles of reproductive anatomy, gamete formation, endocrinology, cyclicity and parturition. The laboratory experience will emphasize theory learned in lecture and will include uses of reproductive technology to maximize reproductive efficiency and fertility. 3 hours lecture. (000467) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 301 Intermediate Animal Systems 3 Units Prerequisite: ANSC 101. Typically Offered: Fall only An overview of world and United States animal production systems, emphasizing the scientific principles and management of large and small ruminants (beef, dairy, sheep, goats), monogastrics (swine, equine), as well as meat, poultry, and aquaculture. 2 hours laboratory, 2 hours lecture. (000455) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ANSC 350 Meat and the Consumer 3 Units Typically Offered: Fall only Muscle growth and composition, nutritional and health concerns, meat safety and advances in product development, preparation and storage. 3 hours laboratory, 2 hours lecture. (000447) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 320 Advanced Livestock Selection and Carcass Evaluation 3 Units Typically Offered: Fall only Develop skills in quality grading and yield grading animals both live and on the rail. Improve skills in selecting animals in pasture conditions and develop ability to explain decisions and be able to accurately describe their reasons. Numerous field trips to fairs and ranches will be required. 3 hours laboratory, 2 hours lecture. (000457) Grade Basis: Graded Repeatability: You may take this course for a maximum of 6 units Course Attributes: Upper Division	ANSC 360 Animal Health and Disease 3 Units Prerequisite: ANSC 101. Typically Offered: Fall and spring A study of disease processes in livestock. Principles of disease organisms and the physiology of infection. Mechanisms in which the body combats infections, i.e., immune response. Herd health considerations for disease prevention and treatment. 3 hours lecture. (000466) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 330 Animal Nutrition 3 Units Prerequisite: ANSC 101, ANSC 230. Typically Offered: Fall and spring A study of the nutritive requirements of animals for maintenance, growth, lactation, reproduction and other bodily functions. Intermediary metabolism of nutrients, chemical and animal analysis of feedstuffs, design and implementation of nutrition studies and writing of a scientific paper. 3 hours lecture. (000465) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ANSC 370 Livestock and Companion Animal Behavior 3 Units Prerequisite: ANSC 101. Typically Offered: Fall only This course promotes an understanding of basic principles of livestock (i.e., food animals and horses) and companion animal (i.e., dogs and cats) behavior and its application of production, shelter, and household set ups. This course is structured to help students understand the role of animal behavior on welfare and/or productivity of livestock and companion species. This course has an emphasis on how livestock and companion animals communicate with their surroundings and how we can adjust their housing or management to address their needs in order to improve their well-being and/or productivity. 3 hours lecture. (022076) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 330L Applied Animal Nutrition Research 1 Unit Prerequisite: ANSC 101, ANSC 330 (may be taken concurrently). Typically Offered: Fall and spring This course focuses on various laboratory and research techniques in the animal nutrition field. Students implement and conduct a course level research project, including sample preparation and analysis, and data collection and analysis. 3 hours laboratory. (022090) Grade Basis: Graded Repeatability: You may take this course for a maximum of 2 units Course Attributes: Upper Division	ANSC 372 Sheep Production 3 Units Prerequisite: ANSC 101 or equivalent. Typically Offered: Fall only A study of approved practices in commercial and purebred sheep production with emphasis on production costs, disease, nutrition, genetic selection, production records, niche marketing, and contributions of sheep to environmental sustainability. 3 hours laboratory, 2 hours lecture. (022454) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division

ANSC 373 Swine Production 3 Units Prerequisite: ANSC 101 or equivalent. Typically Offered: Spring only A study of approved practices in commercial and purebred swine production with emphasis on production costs, disease, reproduction, nutrition, genetic selection, production records and niche marketing. 3 hours laboratory, 2 hours lecture. (022455) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ANSC 399 Special Problems 1-3 Units Prerequisite: Upper-division standing. Typically Offered: Fall and spring This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in animal science under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (000474) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Upper Division
ANSC 374 Organic Dairy Production and Management 3 Units Prerequisite: ANSC 101. Typically Offered: Spring only This course covers all scientific aspects of organic dairy production including soil fertility, grazing management, pasture and forage quality, nutritional ration balancing on pasture, enhancing dry matter intake on pasture, holistic herd health (including homeopathy, acupuncture and herbal medicine), organic methods to improve milk quality, organic calf management strategies, and the organic certification process and how to develop your Organic System Plan. The course also covers many new topics of discussion for organic research and development. 3 hours laboratory, 2 hours lecture. (021420) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ANSC 440 Physiology of Domestic Animals 3 Units Prerequisite: ANSC 101, CHEM 107. Recommended: CHEM 108. Typically Offered: Fall and spring Comparative study of the physiology of organ systems, with major emphasis on farm animals. 3 hours laboratory, 2 hours lecture. (000456) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 389 Internship in Animal Science 1-3 Units Prerequisite: Prior approval of academic goals by the Internship Coordinator. Typically Offered: Spring, summer, fall This course is an internship offered for 1.0-3.0 units. You must register directly with a supervising faculty member. Work experience with selected livestock operations is to be completed and supervised by faculty and staff of cooperating livestock ranch. 0 hours independent study. (000472) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 15 units Course Attributes: Upper Division	ANSC 450 Food Sanitation and Quality Control 3 Units Prerequisite: ANSC 101; CHEM 107 or CHEM 111. Typically Offered: Spring only This course is intended for students involved in producing, selling, and handling food products who are interested in a course on principles of food sanitation and quality control from a management standpoint. 3 hours seminar. (000468) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 394 Livestock Grazing Ecology and Management 3 Units Typically Offered: Fall only This course examines how herbivores interact with their environment and how understanding of these interactions is applied to the management of grazing animals or the environments they inhabit or both. Emphasis is placed on the scientific basis for grazing management decisions and management designed to accomplish a variety of outcomes. 3 hours laboratory, 2 hours lecture. (022006) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	ANSC 470 Animal Welfare 3 Units Prerequisite: ANSC 360, ANSC 370 or faculty permission. Typically Offered: Spring only This course provides an introduction to the scientific approaches for assessing animal welfare. For that, we discuss animal welfare metrics, data collection, and the type of questions that need to be asked for the state of an animal's welfare to be assessed. We also discuss ethical views and the role of different stakeholders in law and policy development. 3 hours lecture. (022276) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
ANSC 398 Special Topics 1-3 Units Typically Offered: Inquire at department This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000473) Grade Basis: Graded Repeatability: You may take this course more than once Course Attributes: Upper Division	ANSC 471 Advanced Beef Cattle Management and Production 3 Units Prerequisite: ANSC 101, ANSC 271 or faculty permission. Typically Offered: Spring only Advanced instruction of world and United States beef production systems. Investigation of the segmentation of the beef industry, including seedstock, commercial cow-calf, stocker, feedlot, packer, retailer and consumer. Integrated beef production systems are evaluated based on consideration of genetics, nutrition, health, reproduction, product, forage management and marketing. 3 hours laboratory, 2 hours seminar. (000459) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division

ANSC 474 Dairy Production and Management**3 Units****Prerequisite:** ANSC 101.**Typically Offered:** Spring only

A comprehensive study of large dairy management with emphasis placed on efficient reproduction and nutrition. Additional studies include evaluation of replacement heifer development scenarios, cow comfort, and record keeping systems. 3 hours laboratory, 2 hours lecture. (000463)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**ANSC 489 Internship in Animal Science****1-3 Units****Typically Offered:** Fall and spring

3 hours lecture. (000480)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**ANSC 498 Special Topics****1-3 Units****Prerequisite:** Department permission.**Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000481)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Upper Division**ANSC 499 Special Problems****1-3 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (000482)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**ANSC 499H Honors Research in Animal Science****6 Units****Prerequisite:** Faculty permission.**Typically Offered:** Inquire at department

An intensive 6-unit, one-year course in agricultural research. See College office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (020208)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division

Plant and Soil Science

PSSC 101 Introduction to Plant Science**3 Units GE****Typically Offered:** Fall and spring

Plant structure, growth, reproduction, and responses to the environment. How humans modify plants and the environment to grow crops. 3 hours laboratory, 2 hours lecture. (007765)

General Education: Laboratory Activity (B3); Life Science (B2)**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**PSSC 160 West Coast Crop Production****1 Unit****Typically Offered:** Inquire at department

A study of people, careers, crops, and systems related to crop industries in the area. An opportunity to meet with professionals and learn about the skills required for research, management, and services that support agricultural production. Meets the second half of the semester. 1 hour lecture. (007779)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**PSSC 198 Special Topics****1-3 Units****Prerequisite:** Department permission.**Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (007787)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**PSSC 250 Introduction to Soil Science****3 Units****Prerequisite:** CHEM 107 or CHEM 111.**Typically Offered:** Fall only

Soil biology, fertility, chemistry, physical properties, taxonomy and their applications to agricultural management and environmental enhancement. Relationships of soils to the world food supply and population. 3 hours laboratory, 2 hours lecture. (007776)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**PSSC 266 California Orchard Production and Management****3 Units****Typically Offered:** Fall only

An evaluation of various decisions made in the management of fruit and nut trees. Management topics include studies of climate zones, soil selection, financing, farm organization, irrigation systems, field layout, varietal selection, nutritional needs, harvesting, labor management, marketing, and budgeting. The student is required to prepare a budget and calendar of orchard operations. 3 hours laboratory, 2 hours lecture. (021078)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**PSSC 274 Greenhouse Management****3 Units****Typically Offered:** Fall only

Greenhouse construction, environment, and management practices, including heating and cooling, irrigation, fertilization, and pest control. 3 hours laboratory, 2 hours lecture. (007818)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Lower Division**PSSC 298 Special Topics****1-3 Units****Typically Offered:** Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (020969)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Lower Division

PSSC 299 Special Problems 1-3 Units Prerequisite: Faculty permission. Typically Offered: Fall and spring This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020960) Grade Basis: Credit/No Credit Repeatability: You may take this course for a maximum of 6 units Course Attributes: Lower Division	PSSC 343 Introduction to Weed Science 3 Units Prerequisite: AGRI 331. Typically Offered: Spring only Identification, modes of spread, and population ecology of weeds and other invasive plant species. Biological, cultural, mechanical, and chemical control of weeds and invasive species. Methods of crop/vegetation management to control and reduce weed populations. 3 hours laboratory, 2 hours lecture. (007801) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
PSSC 305 Introduction to Wines 3 Units Prerequisite: At least 21 years of age. Typically Offered: Fall only Grape-growing, and winemaking in California wine regions. Wine and food matching. Sensory evaluation. 1 hour discussion, 2 hours lecture. (007781) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	PSSC 345 Horticultural Therapy 3 Units Typically Offered: Spring only An introductory course in horticultural production as therapy. Focus is on the therapeutic benefits available to people engaging in horticultural activities. Covers the special needs associated with elderly, veterans, children and adolescents, and people with disabilities. Overview of techniques and training requirements for therapists in garden and greenhouse activities. Applicable to students in recreation, kinesiology, nursing, psychology and horticulture. This course fulfills a partial requirement for becoming a registered horticultural therapist. 3 hours lecture. (021807) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
PSSC 309A Directed Work in Field and Row Crops 2 Units Prerequisite: AGET 150 or faculty permission. Typically Offered: Fall and spring Directed work and discussion on all aspects of field and row crop production practices applicable to northern California. 2 hours activity, 1 hour discussion. (007773) Grade Basis: Graded Repeatability: You may take this course for a maximum of 4 units Course Attributes: Upper Division	PSSC 353 Plant Protection Materials, Methods, and Regulations 3 Units Prerequisite: CHEM 107 or CHEM 111; PSSC 250. Typically Offered: Fall only An examination of materials and application methods used for protecting the health of plants in a manner that is safe for the environment, applicator, and consumer. Comprises the laws and regulations, safety, application, properties, mode of action, toxicology, and environmental impacts of pesticides, fertilizers, and other materials used in agriculture. 3 hours laboratory, 2 hours lecture. (007806) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division; Sustainable Course
PSSC 309B Directed Work in Vegetable Crops 2 Units Typically Offered: Fall and spring Directed work and discussion on all aspects of vegetable crop production practices applicable to northern California. 2 hours activity, 1 hour discussion. (007788) Grade Basis: Graded Repeatability: You may take this course for a maximum of 4 units Course Attributes: Upper Division	PSSC 356 Soil Quality and Health 3 Units Prerequisite: PSSC 250 or faculty permission. Typically Offered: Spring only Course examines the capacity of the soil to function within natural and managed ecosystems to sustain plant/animal productivity, maintain or enhance water and air quality, and support human health and habitation. Soil quality factors include biological, physical, and chemical soil properties. 2 hours activity, 2 hours lecture. (007808) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division; Sustainable Course
PSSC 330 Rangeland Resources and Management 3 Units Typically Offered: Fall only A survey of North American rangeland resources and the principles of their use and management, including basic plant-animal-soil relationships and multiple uses. 3 hours lecture. (007775) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division	PSSC 361 Production of Annual Crops 3 Units Prerequisite: PSSC 101. Typically Offered: Fall only This course covers the requirements and cultural practices needed for maximizing yields of annual field crops. Principles affecting growth development and management will be covered. For field experience, students are advised to enroll in PSSC 309A/PSSC 309B. 3 hours laboratory, 2 hours lecture. (007810) Grade Basis: Graded Repeatability: You may take this course for a maximum of 3 units Course Attributes: Upper Division
PSSC 340 Economic Entomology 4 Units Typically Offered: Fall only A survey of the structure and function of insects, leading to a fundamental understanding of applied insect ecology and taxonomy. Particular emphasis is placed on arthropod species of economic importance to humans. 3 hours laboratory, 3 hours lecture. (007797) Grade Basis: Graded Repeatability: You may take this course for a maximum of 4 units Course Attributes: Upper Division	

PSSC 363 Forage Crops**3 Units****Prerequisite:** PSSC 101 or PSSC 330.**Typically Offered:** Inquire at department

Grasses and legumes; their production and management for irrigated pastures, hay, silage, and seed. Plant characteristics and adaptation. 3 hours laboratory, 2 hours lecture. (007812)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 365 Sustainable Vegetable Crop Production****3 Units****Prerequisite:** PSSC 101.**Typically Offered:** Fall only

An experiential, field-oriented course covering origin, nutrition, environmental requirements, and management strategies for the sustainable production of vegetables. It provides students with the opportunity to appreciate the vast array of vegetables in the world and develop management skills for commercial production of vegetables in a sustainable manner. 3 hours lecture. (021404)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 366 Fruit and Nut Production****3 Units****Prerequisite:** AGRI 331, PSSC 101.**Typically Offered:** Spring only

Managing and optimizing the fruit and nut production system. Selection of planting sites and varieties, tree training and pruning, pollination, thinning, irrigation, mineral nutrition, and pest management are included. 3 hours laboratory, 2 hours lecture. (007820)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 369 Seed Production****3 Units****Prerequisite:** PSSC 101.**Typically Offered:** Spring only

This is an overview of seed production principles and practices that involves discussion of suitable environmental and nutritional conditions, as well as specific applied methods for individual important crops to produce quality seeds for the market. The lectures provide a general overview through detailed presentations. Students will also be involved in student-led presentations and discussions on seed production practices of specific crops. Seed testing methods and identification skills will also be emphasized. 3 hours lecture. (022195)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 389 Internship in Plant and Soil Science****1-6 Units****Prerequisite:** Junior standing, faculty permission.**Typically Offered:** Fall and spring

This course is an internship offered for 1.0-6.0 units. You must register directly with a supervising faculty member. Internship with private industry, state, federal, international, or non-profit organization. Selected topic must be in a Plant and Soil Science Option area. 0 hours independent study. (007824)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**PSSC 390 Food Forever: Comparisons of Sustainable Food Production Systems** **3 Units GC, GE****Prerequisite:** GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor.**Typically Offered:** Fall only

How ecological factors, technology, and human values interact to determine available choices of food and its production. Consequences of these choices in terms of community structures, resource allocations, and stability of agro-ecosystems. This course is not intended for majors, but open to them. 3 hours lecture. (004874)

General Education: Upper-Division Scientific Inq/Quant Reason (UDB); Agriculture, Food, and Environment Pathway; Global Studies Pathway**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Global Cultures; Sustainable Course**PSSC 392 World Food and Fiber Systems** **3 Units GC, GE****Prerequisite:** GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor.**Typically Offered:** Spring only

A study and analysis of various world agriculture systems that provide food and fiber. Environmental, technological, socio-economic, and political factors. 3 hours lecture. (000068)

General Education: Upper-Division Scientific Inq/Quant Reason (UDB); Agriculture, Food, and Environment Pathway; Global Studies Pathway**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Global Cultures; Sustainable Course**PSSC 398 Special Topics****1-3 Units****Typically Offered:** Inquire at department

This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (007827)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Upper Division**PSSC 399 Special Problems****1-3 Units****Prerequisite:** Upper-division standing.**Typically Offered:** Fall and spring

This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in plant science and soil science under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (007828)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**PSSC 441 Principles of Integrated Pest Management** **3 Units****Prerequisite:** AGRI 331; BIOL 446, PSSC 340, or PSSC 343.**Typically Offered:** Spring only

An introduction to the principles and mechanisms of integrated management of insect pests, plant pathogens, and weeds, dealing with such areas as the agro-ecosystem, population dynamics, and specific approaches to pest management. 3 hours lecture. (007834)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division; Sustainable Course

PSSC 451 Soil Genesis and Classification 3 Units**Prerequisite:** PSSC 250 or faculty permission.**Typically Offered:** Spring only

An examination of the factors of soil formation, criteria and systems of soil classification. The laboratory consists of five all-day field trips. 3 hours laboratory, 2 hours lecture. (007837)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 453 Soil Fertility and Plant Nutrition 3 Units****Prerequisite:** PSSC 250 or faculty permission.**Typically Offered:** Fall only

Properties of soils, fertilizers, and plant materials. Soil amendments and soil reaction effects on plants. Fertilizer usage. 3 hours laboratory, 2 hours lecture. (007840)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 3 units**Course Attributes:** Upper Division**PSSC 459 Crop Physiology 4 Units****Prerequisite:** PSSC 101, PSSC 250 (or equivalents).**Typically Offered:** Spring only

This course is designed to examine the yield potential of field crops in various environments. Students learn about the importance of crop physiology in crop production and breeding. Topics include canopy architecture and radiation interception, photosynthesis and respiration, carbon and nitrogen allocation, plant-water relationships, and plant response to restricted environments. The course provides practical experience using instrumentation to measure physiological processes in laboratory and field. Special emphasis includes design of field and greenhouse experiments. 3 hours laboratory, 3 hours lecture. (021698)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 4 units**Course Attributes:** Upper Division**PSSC 489 Internship: Plant/Soil Science 1-3 Units****Prerequisite:** PSSC 389, senior/graduate standing, faculty permission.**Typically Offered:** Fall and spring

Internship with private industry, state, federal, international, or non-profit organization. Selected topic must be in a PSSC option area. 9 hours supervision. (007861)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**PSSC 498 Special Topics 1-3 Units****Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours seminar. (007864)

Grade Basis: Graded**Repeatability:** You may take this course more than once**Course Attributes:** Upper Division**PSSC 499 Special Problems 1-3 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (007865)

Grade Basis: Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**PSSC 499H Honors Research in Plant and Soil Science 6 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

An intensive 6-unit, one-year course in agricultural research. See College office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (020213)

Grade Basis: Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division

Agriculture Department

The Faculty

Mollie S Aschenbrener 2008

Professor

Doctor of Philosophy Univ of Missouri-Columbia

Tatevik Avetisyan 2020

Assistant Professor

Master of Science Michigan St Univ

Blake T Bailey 2000

Lecturer

Bachelor of Science CSU-Chico

Elizabeth A Boyd 2008

Professor

Doctor of Philosophy Univ of Cal-Riverside

Whitney B Brim-DeForest 2018

Lecturer

Doctor of Philosophy Univ of Cal-Davis

Jacob N Brimlow 2009

Professor

Doctor of Philosophy North Carolina St Univ at Raleigh

Joshua J Brownfield 2010

Lecturer

Doctor of Veterinary Medicine Univ of Cal-Davis

Clay D Carlson 2000

Lecturer

Master of Science Univ of Arizona

Christine L Carroll 2016

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Cynthia A Daley 1993

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Rebecca A Dykes 2021

Lecturer

Master of Science Univ of Cal-Davis

Scott M Grist 2022

Lecturer
Bachelor of Science CSU-Chico

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Thomas M Henderson 2016

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Doctor of Philosophy Oregon St Univ

Eric E Houk 2009

Program Coordinator
Doctor of Philosophy Colorado St Univ

Amy K Howard-Houk 2012

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Master of Science Boise St Univ

Lijiao Hu 2022

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Jamal Javanmardi 2019

Assistant Professor
Doctor of Philosophy University of Tehran

Gregory B Jones 2017

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Garrett C Liles 2015

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Richard C Rosecrance 1998

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Alyssa A Schager 2002

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Logan B Smith 2018

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Baohui Song 2007

Professor
Doctor of Philosophy Univ of Kentucky

Patricia Stock 2021

Professor
Doctor of Philosophy Universidad Nacional de La Plata

Jessica M Toombs 2021

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Doctor of Philosophy Oklahoma St Univ Main Campus

Grazzyne Tresoldi 2018

Assistant Professor
Doctor of Philosophy Univ of Cal-Davis

Priya M Tuvell 2019

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Shuang Xu 2007

Lecturer
Master of Science Univ of Kentucky

Hossein Zakeri 2014

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Emeritus Faculty

Lee S Altier

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Marian L Baldy 1971

Emeritus
Doctor of Philosophy Univ of Cal-Davis

Richard W Baldy 1970

Emeritus
Doctor of Philosophy Univ of Cal-Davis

LeRoy Barker 1965

Emeritus

Ronald C Borge 1974

Emeritus
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